LUMNOU, R.N.

AUTHORS:

Gorshkov, V.K., Ivanov, R.N., Kukavadze, G.M.,

89-7-2/32

Reformatskiy, I.A.

TITLE:

The Yield of Fission Products of  $U^{235}$  Within the Domain of Rare Earths (Vykhod produktov deleniya  $U^{235}$  v redkenemel nov oblasti)

PERIODICAL:

Atomnaya Energiya, 1957, Vol. 3, Nr 7, pp. 11-14 (USSR)

ABSTRACT:

The present paper describes the measuring of these yields by means of the integral mass-spectrographic method, with the help of which the relative share (in %) of several elements contained in the sample can be determined simultaneously during the experiment. This method permits the mass-spectroscopical measuring of the yields on La<sup>139</sup>, Pr<sup>141</sup>, Pm<sup>147</sup> and Pm<sup>149</sup>. Working out this method and measuring took place on a mass spectrograph with a resolving capacity of 1:800. First, the production of the samples is discussed. The uranium preparation enriched somewhat with U<sup>235</sup> was here irradiated with thermal neutrons in a reactor. The final results of these mass-spectrographic measurings are shown in a table and are compared with some data given in publications.

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Lanthanum, praeseodymium, promethium, samarium: The increased yield of La139 can hardly be explained by means of the hitherto existing

The Yield of Fission Products of U<sup>235</sup> Within the Domain of Rare Earths

89-7-2/32

theoretical investigations concerning the course of the curve of the yields. The peak "composed" from Fm<sup>147</sup> and Sm<sup>147</sup> was separated on the basis of the difference between the sublimation temperatures of samarium and promethium. According to various details given concerning the above mentioned elements the authors compute the cross section of the absorption of neutrons for Pm<sup>147</sup> and find:

section of the absorption of neutrons 10. 1...  $d_{147} = 90 \pm 20$  barn.  $d_{147}^{Sm} = 1000 \pm \text{barn}$ .

Neodym: The yields of:

Note 143 and Note 144 given here are somewhat lower than those given in publications. Gerium: Two isotopes are contained mainly in the sample investigated here, namely Ce 140 and Ce 142 with the ratio of the masses  $M_{140}/M_{142} = 1,082 \pm 0,029$ . The lack of noticeable amounts of Ce 144 is explained by their decay in Note 144. Samarium: For the lower limit of the absorption cross section of  $M_{149}^{144}$  for thermal neutrons the value 58 COO  $\pm$  9000 barn is found. The following composition of isotopes for semarium was found by the authors (in %):

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The Yield of Fission Products of  $\mathbf{U}^{235}$  Within the Domain of Rare Earths

89-7-2/32

 $\text{Sm}^{146}$ : 40 ± 3;  $\text{Sm}^{148}$ : 15 ± 2;  $\text{Sm}^{150}$ : 38 + 3;  $\text{Sm}^{152}$ : 7 ± 2. There are 1 figure, 3 tables, and 6 references, 3 of which are Slavic.

SUBMITTED:

January 12, 1957

AVAILABLE:

Library of Congress

Card 3/3

1. Uranium isotopes (Radioactive)-Fission 2. Rare earths-Mass spectra 3. Lanthanum isotopes (Radioactive)-Determination 4. Praeseddymium isotopes (Radioactive)-Determination 5. Promethium isotopes (Radioactive)-Determination 6. Samarium isotopes (Radioactive)-Determination 7. Neodym isotopes (Radioactive)-Determination

89-12-11/29 Ivanov, R. N., Gorshkov, V. K., Anikina, M. P., AUTHORS:

Kukavadze, G. M., Ershler, B. V.

Fission Yields of Several Heavy Fission Products of U233 TITLE:

(Vykhody nekotorykh tyazhelykh oskolkov pri delenii U233)

Atomnaya Energiya, 1957, Vol. 3, Nr 12, pp. 546-547 (USSR) PERIODICAL:

The absolute fission yields were determined by means of the isotope dilution method (1) and of the mass spectrographically ABSTRACT:

obtained integral concentrations (2). The sample of U233 was

irradiated for two months in a reactor. The following yields in % were measured;

Card 1/3

CIA-RDP86-00513R000619120004-8" APPROVED FOR RELEASE: 03/20/2001

Fission Yields	of Several Absolute Yi Isotope  Cs 137 Cs 140 Ce 142 Ce 143 Nd 144 Nd 145 Nd 146 Nd 148 Nd 150 Nd 149 Sm 151+152 Sm 151	Heavy Fission Problem eld according to Method 1  5,2 + 0,3 5,8 + 0,3 5,45+ 0,5 5,0 + 0,3 3,8 + 0,4 2,82+ 0,25 2,20+ 0,15 1,03+ 0,10 0,51+ 0,08 0,66+ 0.13 0,60+ 0,14	Method 2  5,50 + 0,13 6,16 + 0,14 6,16 + 0,24 6,06 + 0,24 5,19 + 0,17 3,84 + 0,15 2,88 + 0,08 2,24 + 0,07 1,07 + 0,04 0,49 + 0,02 0,70 + 0,03 0,54 + 0,03	89-12-11/29	
Card 2/3	,				

#### CIA-RDP86-00513R000619120004-8 "APPROVED FOR RELEASE: 03/20/2001

Fission Yields of Several Heavy Fission Products of U<sup>233</sup> 89-12-11/29

The Xe 135 -absorption coefficient was obtermined at

 $(3,2 \pm 1,0)$ .  $10^6$ b. (There are 1 table, 1 figure and 8 references, 5 of which are Slavic).

SUBMITTED:

May 20, 1957

AVAILABLE: Library of Congress

Card 3/3

MURIN, A. N., ERSHLER, B. V., KUKANADZE, G. M., ANIKHINA, M. F., GORSHKOV, V. K., IVANOV, R. N., KRIZANSKIY, L. M. and REFCRMATSKIY, I. A.

"Mass-Spectrometric Study of U<sup>233</sup>, U<sup>235</sup> and Pu<sup>239</sup> Fission Products."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy, & Geneva, 1 - 13 Sep 58.

IMANON R.N.

AUTHORS: Anikina, H. P., Ivanov, R. N., 89-2-22/35

Hukavadze, G. H., Ershler, B. V.,

TITLE:

The Half-Life of  $Sr^{90}$  and  $^{1}ts$  Fission Yield from  $U^{255}(Period\ poluraspada\ Sr^{90}$  i vykhod ego pri delenii  $U^{255})$ .

PERIODICAL:

Atomnaya Energiya, 1958,

Kr 2, pp. 198-198 (USSR)

ABSTRACT:

According to the usual method the half-life of  $\mathrm{Sr}^{90}$  was

determined to be 29,3  $\pm$  1,6 a. The yields of Sr90 and Sr88 in the  $U^{253}(n,f)$  reaction were de-

termined to be  $5.3 \pm 0.3\%$  for Sr<sup>88</sup> and

 $5.8 \pm 0.4 \%$  for Sr90. The yield for Sr90 given in reference 7 must be calculated a new, as the half-life period of 19,9 a was still used there. When the newly determined half-life period is used, the yield in this case amounts to  $6.3 \pm 0.3 \%$ . There are 1 table and 7

references, 4 of which are Slavic.

SUBLITTED:

September 18, 1957

AVAILABLE:

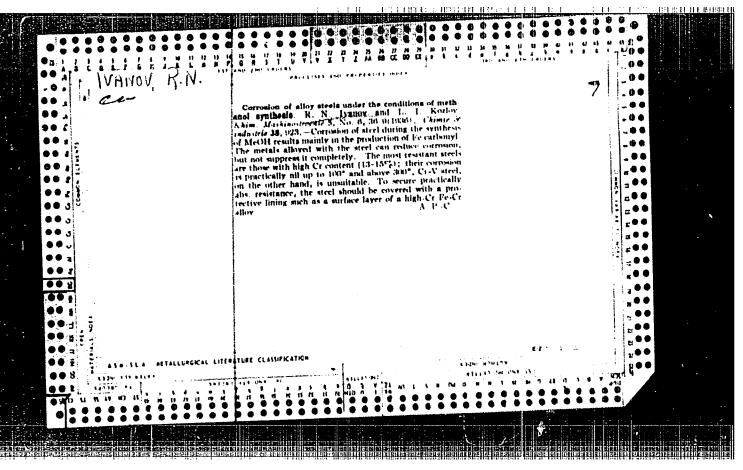
Library of Congress

Card 1/1

1. Half life-Measurement

2. Strontium 90-Half life-Measurement

CIA-RDP86-00513R000619120004-8" **APPROVED FOR RELEASE: 03/20/2001** 

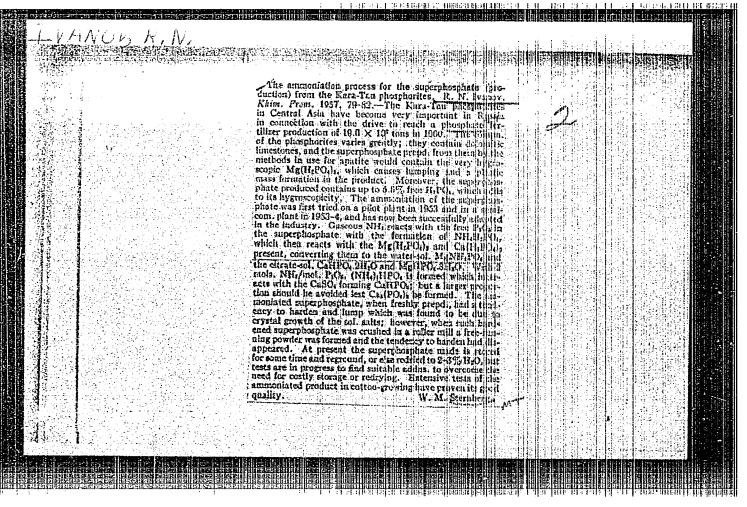


IVANOV, R.H.

Crystalline form of calcium sulfate in superphosphate. Dokl. AN Uz.
SSR no.8:37-40 '57.

l.Institut khimii AN UzSSR. Predstavleno akad. AN UzSSR M.N.
Nabiyevym.

(Calcium phosphate)



IVAMOV, R.H., Cand Chem Sci -- (disc) "Study of the process of the superphosphete manonimation from Karatay phosphorites." Teshkent, 1959. 20 pp with ills. (Acad of Sci USSSR. Inst of Chemistry), 200 copie (FL, 30-59, 118)

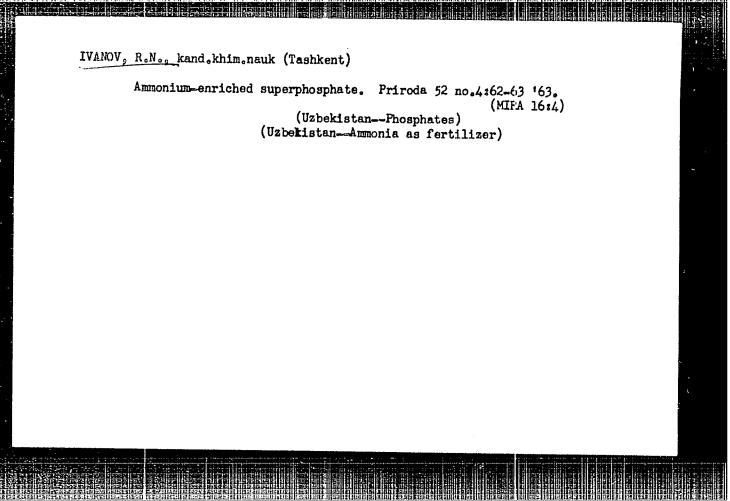
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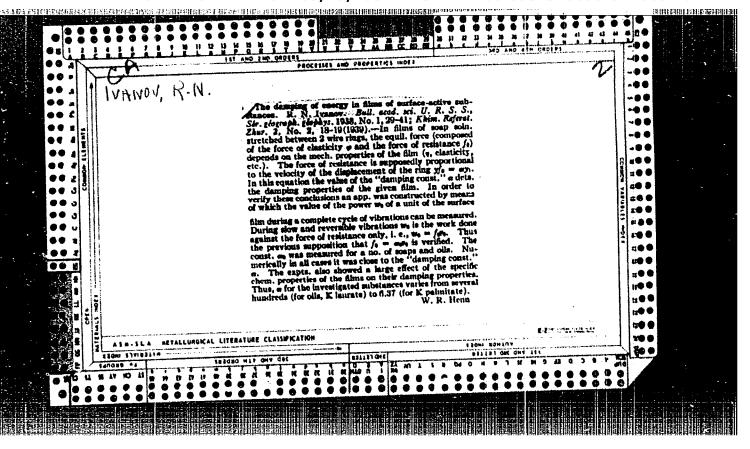
IVANOV, R.N.

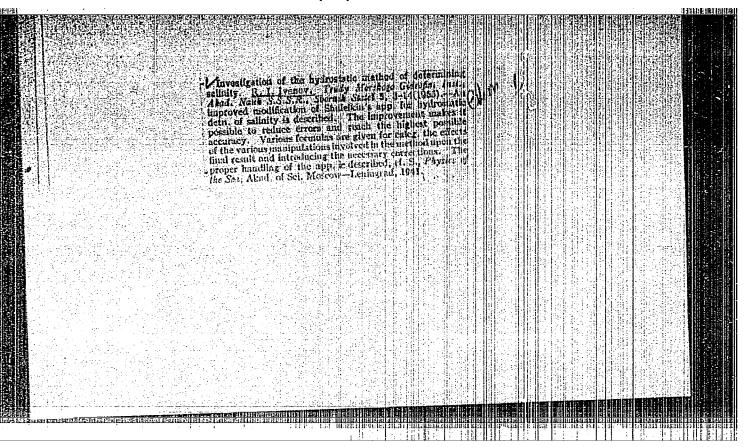
Conference of the workers of chemical and cement industries of Uzbekistan. Zav.lab. 26 no.7:906 '60. (MIRA 13:7)

1. Glavnyy spetsilist Gosudarstvennogo naucho-tekhnicheskogo komiteta Soveta ministrov Uzbekskoy SSR. (Uzbekistan--Chemical industries)



APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000619120004-8"





SOV/124-58-7-7815

Translation from. Referativnyy zhurnal, Mekhanika, 1958, Nr 7, p 72 (USSR)

AUTHOR:

Ivanov, R.N.

TITLE:

An Electrically Measuring Sea Current Meter (Elektrometri-

cheskaya morskaya vertushka)

PERIODICAL: Tr. Mosk. gidrofiz. in-ta AN SSSR, 1957, Vol 11, pp 73-83

ABSTRACT:

Bibliographic entry

1. Ocean currents--Measurement 2. Electric meters--Applications

Card 1/1

SOV/124-58-11-12675

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 11, p 106 (USSR)

AUTHOR:

Ivanov, R. N.

TITLE:

Influence of the Shore on the Direction of a Wind-driven Surface Current (Vliyaniye berega na napravleniye vetrovogo poverkhnost-

nogo techeniya)

Tr. Morsk. gidrofiz. in-ta AN SSSR, 1957, Vol 11, pp 84-96 PERIODICAL:

ABSTRACT:

An explanation is provided of the mechanism of the influence of the shoreline on the direction of a wind-driven surface current. The reasoning is based on the author's own full-scale observations near the south shore of the Crimea near Katsiveli, full-scale observational data of Is. Islyamov obtained near the Libava lightship (Liepaja lightship, LatvSSR; Transl. Note), and data by A. I. Mikhalevskiy for the Sredne-Zhemchuzhnyy lightship in the northern part of the Caspian Sea. Drift and gradient currents are considered as component parts of a general circulatory water current that arises under the influence of a wind and a shoreline. For the simplest case of a steady coastal wind-driven surface current, specifying a sufficiently rectilinear and extended shoreline and isobaths that run parallel to the shoreline, the

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49-58-5-13/15

AUTHOR: Ivanov, R. N.

TITLE: The Energy Exchange Mechanism between Wind and Current.

(O mekhanizme peredachi energii vetra techeniyu)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 5, pp 673-677 (USSR)

The reason for energy exchange between wind and water is usually considered to be friction. But when a body moves ABSTRACT: relative to a liquid or gas stream, dynamic pressure forces are present besides surface friction. These pressure forces depend on the shape of the body and its situation with respect to the current. This applies also to waves induced by air currents, even though a wave is not a body in the usual sense of the word. Thus the tengential stress f induced by the wind in the perturbed water surface is made up of the friction forces  $f_{\mathbf{T}}$  and the horizontal component of the The author next  $f_p$  i.e.  $f = f_T + f_p$ . dynamic pressure, considers the question as to what influence these two factors have in the development of wind currents. Francis (Ref.1) suggested that the surface stress, induced by the

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CIA-RDP86-00513R000619120004-8" APPROVED FOR RELEASE: 03/20/2001

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The Energy Exchange Mechanism between Wind and Current.

wind, is due mainly to the friction of small, slow-moving rippies. The author mentions experiments he has carried out in the tank at the Black Sea division of the Maritime Institute of Hydrophysics (Morskoy gidrofizicheskiy Institut) of the Academy of Sciences USSR (Ref.2), to investigate the role of ripples in the transmission of energy. He used an apparatus which consisted of a frame made from two parallel tubes of sufficient strength fixed vertically into the tank. Wire was fixed between these two supports, perpendicular to the current, at various heights. A light aluminium plate 10 x 5 cm was fastened to each wire. In the experiments, the water was first calm and the plates hung vertically. Then a constant velocity wind was suddenly created and as the current extended through the liquid and its velocity increased, the plates deviated, one after the other, from the vertical (Fig.1). This deviation was photographed together with a special stop watch. From the data thus obtained, the interval between the creation of the wind and the deviation of any plate from the vertical through a small, but measurable, angle could be calculated. Fig.2 shows the results of one experiment. The abscissa gives the time interval, T, for a deviation through an angle

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The Energy Exchange Mechanism between Wind and Current.

of 5° (corresponding to a velocity of flow of 1-2 cm/sec). The ordinate gives the depth, z , of the plate from the surface. As can be seen, the disturbance is, of course, first induced in the upper layers and then transmitted downwards - the thickness of the layer concerned depending linearly on the time. The straight lines  $(z, \tau)$  indicate, by their intersection with the \tau axis, the moment that a surface current appears. It should be noted that this always coincides with the moment of appearance of ripples. We will see that before the appearance of ripples a current is formed, depending for its creation on the force fm (Ref.3), but, at the moment that the ripples appear, this current possesses too small a supply of kinetic energy to be detected by the above apparatus. This fact - that current cannot be observed before the appearance of ripples permits the assumption that  $f_p$  predominates over  $f_T$ The author now considers the force,  $f_p$ , in more detail. Taking a band on the wave surface of unit width and length

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equal to the wavelength  $\lambda$ , it is required to calculate the horizontal component,  $f_{\lambda}\lambda$ , of the wind pressure acting on the surface. p" and p' denote the wind pressure per unit surface on the windward and leeward sides of the wave, respectively. p" and p can be considered as functions of y - the elevation of an element of the wave surface above its base level. For the windward slope, the wind pressure along a normal to the surface on an element ds at a point with ordinate y is p"ds. The horizontal projection of this is p"sin ads (a being the relevant angle). But sin ads = dy and hence the projection equals p"dy. The integral of this from 0 to h gives the horizontal component of force. In a similar way, one gets the pressure on the leeward side, and, hence, taking the algebraic sum, one obtains:

$$f_{p} = \frac{1}{\lambda} \int_{0}^{h} (p^{n} - p^{n}) dy$$
 (1)

Following V. V. Shuleykin (Ref.2), the author puts:

$$p'' - p' = \delta_a (V - c_1)^2 \chi$$
 (2)

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The Energy Exchange Mechanism between Wind and Current.

is the air density, V is the wind velocity, where  $\delta_a$ is the velocity of the surface current  $c_1 = \overline{U}_{z=0} + c$ ;  $U_{z=0}$ averaged over a period, c is the phase velocity of the wave,  $\chi$  is a dimensionless function of y/h and h is the wave height. The author considers  $\chi$  as given (it can be calculated from Eq.(2). A change of variables is made in Eq.(1) by the substitution  $\eta = y/h$  and Eq.(2) is substituted, giving Eq.(3). Hence, knowing the pressure distribution,  $\chi$  can be calculated and then  $f_p$ . The disturbance is referred to as simple if waves of only one period are present, otherwise it is complex. Up to the moment pressure distributions have only been investigated for simple waves; so X can be found as a function of the wave elements only for this case. V. V. Shuleykin's results (Ref.2) obtained in a wind tunnel with a stationary wave profile, are shown graphically in Fig.3 for two wave profiles of different inclination (Curve I corresponds to  $h/\lambda = 0.06$  and curve II to  $h/\lambda = 0.12$  ). It can be seen

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that  $\mathbf{x}$  is approximately proportional to  $h/\lambda$ . If this proportionality were strict then  $\mathbf{x}/h/\lambda$  would be constant for all  $h/\lambda$ ; as it is,a certain multiplying factor n is necessary. This factor can be made equal to one for one value of  $h/\lambda$  e.g.  $h/\lambda = 0.06$  giving Eq.(4). Extending this over the average wave value, Eq.(5) results  $(\mathbf{x}_{0.06} = 0.018)$ . Fig.4 gives the graph of  $\mathbf{x}$  against  $h/\lambda$ . In the construction of this curve three fixed points were taken:-  $h/\lambda = 0$ ,  $\mathbf{x} = 0$ ;  $h/\lambda = 0.06$ ,  $\mathbf{x} = 0.018$  and  $h/\lambda = 0.12$ ,  $\mathbf{x} = 0.042$ . On extrapolation the greatest possible value for  $h/\lambda$  is found to be 0.143. From this graph and Eq.(5) 'n' can be calculated for different  $h/\lambda$ . For  $h/\lambda = 0$ , the magnitude of n can be obtained graphically as the limit as the derivative of the function  $\mathbf{x}$ , and the argument of  $h/\lambda$  for  $h/\lambda \to 0$ . The graph of n and  $h/\lambda$ , thus found, is also given in Fig.4 - it is seen to be almost linear for all  $h/\lambda$ , giving Eq.(6) with a 5% error. (This is shown in Fig.4 by the dotted line). Eqs.(4) and (6) establish the dependence of  $\mathbf{x}$  on the wave elements. Substituting Eq.(4) in Eq.(3) gives Eq.(7). Numerical

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The Energy Exchange Mechanism between Wind and Current.

integration of Eq.(7) can be done graphically from the corresponding curve in Fig.2, giving:

$$\int_{0}^{1} x_{0.06^{d\eta}} = 0.018$$

Substituting this Eq.(7) gives Eq.(8). Since the expression for  $f_p$  is usually written in the form Eq.(9), this, together with Eq.(8) gives Eq.(10). Fig.4 gives the dependence of  $k_p$  on  $h/\lambda$ . Multiplying both sides of Eq.(8) by  $\lambda$  a formula analogous to Newton's for fluid resistance is arrived at. Indeed,  $f_p\lambda$  is total resistance force for one wave, h is the characteristic cross-sectional area of a wave (both  $f_p\lambda$  and h are expressed in units of bands taken along the wave front),  $V-c_1$  is the wind velocity relative to the moving waves. The resistance coefficient is represented by

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can be expressed in terms of c from  $c_{\star}$  (Eq.11).  $k_{p}$ Eqs.(10) and (11) - Eq.(12). In Newton's formula the resistance coefficient depends on the shape of the body, corresponding in our case to the slope of the wave. Also cx depend in some manner on Reynold's number. mechanism of energy transfer described above can also be applied to complex waves but with a different form of  $\boldsymbol{\chi}$ Francis proposed a form of surface stress proportional to the first power of  $h/\lambda$  , whereas the author suggests the second power. This is because Francis assumed a constant resistance coefficient instead of one proportional to  $\,\mathrm{h}/\lambda$ It also seems too early to suggest that, in complex disturbances, small ripples play the most important part: more evidence is required. A value of  $h/\lambda \left[ (h/\lambda)_{eff} \right]$  can calculated for which k has the same value as for the complex disturbances considered. Thus, in the sea kp= 0.003 giving  $(h/\lambda)_{eff} = 0.1$  - corresponding to small waves. could be concluded from this that  $f_{D}$  is significantly Card 8/9

49-58-5-13/15

The Energy Exchange Mechanism between Wind and Current.

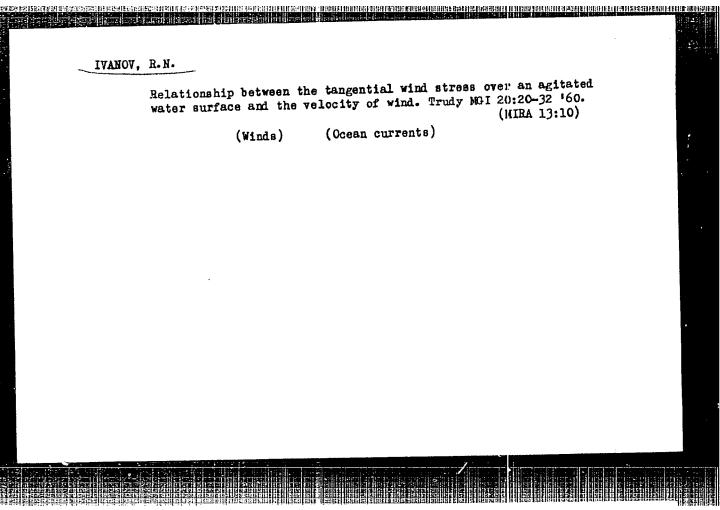
larger than  $f_T$ . The development of wind currents can be imagined to be the following. If the water is completely calm before the wind appears, then a current will be started by surface friction after the wind arises. As soon as ripples appear, dynamic pressure on the surface also arises which procear, dynamic pressure surface stress than the foregoing, so that duces much greater surface stress than the foregoing, so that it is this pressure which provides most of the energy exchange it is this pressure which provides most of the energy exchange. More quantitative data is required to decide whether it is possible to neglect  $f_T$  in comparison with  $f_D$ . The author thanks V. V. Shuleykin for his assistance. There are 4 figures and 2 Soviet, 1 English reference.

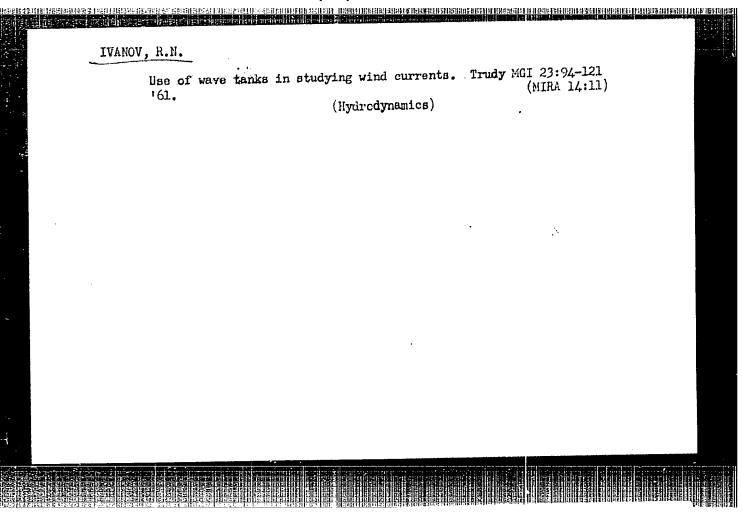
ASSOCIATION: Akademiya nauk SSSR, Chernomorskoye otdeleniye
Morskogo giarofizicheskogo instituta (Academy of Sciences
USSR, Black Sea Division of the Maritime Institute of Hydrophysics)

SUBMITTED: March 15, 1957.

1. Ocean currents--Heat transfer 2. Wind--Physical properties

Card 9/9





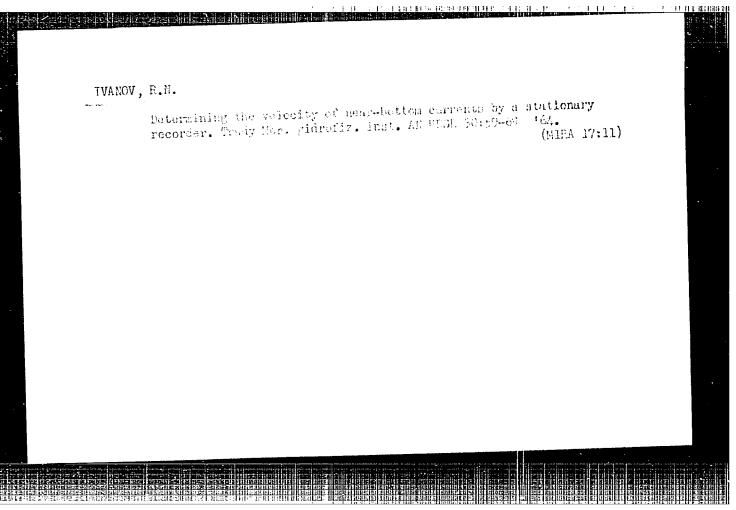
IVANOV, R.N.

Effect of waves on rise and flow phenomena at the meashore. Izv.

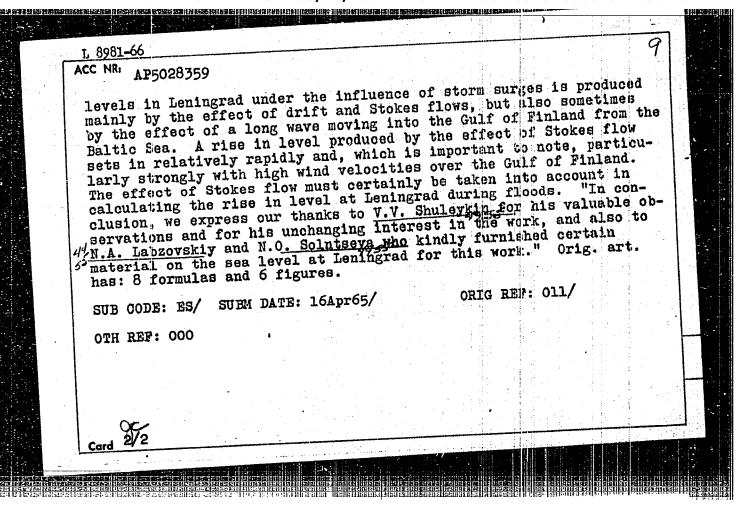
AN SSSR. Ser. geofiz. no.7:955-964 Jl '62. (MIRA 15:7)

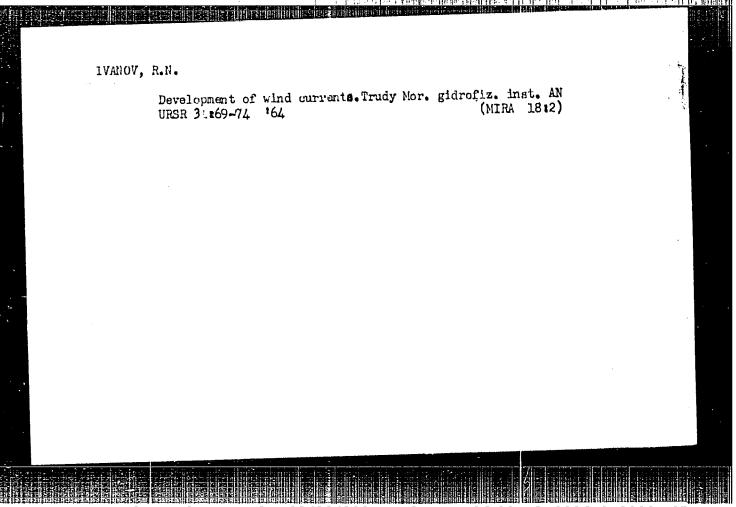
1. AN SSSR, Chernomorskoye otdeleniye morskogo gidrofizicheskogo

instituta. (Waves) (Ocean currents)



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AUTHOR: Ivanov, R. 1	.; Kaminskiy, S.	T. Levin		11 B
ORG: Black Sea Secti	on, Marine Hydro	physical Ing+1+m	44.55	B
ORG: <u>Black Sea Secti</u> skoye otdeleniye, Mo	rskoy gidrofizio	heskiy institut)	e (ouernomor-	
TITLE: The role of S	tokes flow in Le	ningrad floods	12 44.5	
SOURCE: AN SSSR. Izv 1965, 1196-1204	estiya. Fizika a	tmosfery i okeans	, v. 1, no. 1.1	.,
TOPIC TAGS: ocean dy	namics, weather	prediction, ocear	current	
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the catastrophic flo	ode amoduced b	wind Aerografes.	The reasons f	or
gradients can not all	Mand banjeta tre	ine theory of	drifts and fl	жо
files in the Baltic	See and the Cole	r analysis of th	e surface pro-	
latitudes. It then	STO PEOPER OF CITE	surface of the B	ea for these	
produced at Leningrad	itself. It is	concruded that the	le rise in wate	er :
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APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000619120004-8"

IVANOV, R.N.

Sea level rises due to waves and drift. Izv. AN SSSR. Fiz. atm.
i okeana 1 no.1:94-108 Ja '65. (MIRA 18:5)

1. Chernomorskoye otdeleniye Morskogo gidrofizicheskogo instituta AN UkrSSR.

BASTOV, Viktor Fedorovich; IVANOV, Rodion Frokof'yevich;
IPPOLITOV, Anatoliy Georgiyevich; MAREM'YAKICHEV, S.M.;
MOSOLOV, K.V.; IONOV, V.N., red.

[Teaching of the fundamentals of production mechanisation and automation] Prepodavanie osnov mekhanizatsii i avtomatizatsii proizvodstva. Moskva, Vysshaia shkola, 1965.

157 p. (MIRA 18:7)

MOSOLOV, K.V.; BASTOV, V.F.; IVANOV, R.P.; IPFOLITOV, A.G.;
MAREM'YANICHEV, S.N.; DUMCHENKO, N.I., kand. tekhn.
nauk, retsenzent; ZAZERSKIY, Ye.I., inzh., retsenzert;
BARSKIY, M.E., kand. tekhn. nauk, red.

[Fundamentals of the mechanization and automation of production processes] Osnovy mekhanizatsii i avtomatizatsii proizvodstva. Moskva, Mashinostroenie, 1964., 198 p. (MIRA 18:1)

DROBIZHIN, Vladimir Zinov'yevich; IVANOV, R.S., red.

[The Soviet working class in the period of the socialist reconstruction of the national economy] Sovetskii rabachii klass v period sotsialisticheskoi rekonstruktsii narodnogo khoziaistva; lektsiia, prochitannaia v Vysshei partiinoi shkole pri IsKFSS. Moskva, Izd-vo VPSh i AON pri TsK KPSS, 1961. 61 p.

(Labor and laboring classes)

IVANOV, R.S.

Arterial hypertension in pregnancy. Akush. i gin. no.5:30-34 (MIRA 7:12)

1. Iz filiala gospital noy terapevticheskoy kliniki i Leningradskogo meditsinskogo instituta imeni akad. I.P.Pavlova i s otdeleniya fiziologii i patologii beremennosti Instituta akusherstva i ginekologii (dir. prof. A.P.Nikolayev) Akademii meditsinskikh nauk SSSR. (PREGNANCY, in various diseases,

hypertension) (HYPERTENSION, in pregnancy.)

USSR / General Problems of Pathology. Pathological Physiology of Infectious Processes.

U-3

Abs Jour : Ref Zhur - Biol., No 17, 1958, No 80248

Author : Ivanov R. S.

Inst : Not given

Title : Role of Feverish Reaction in the Course of Pneurococcus and

Staphylococcus Sepsis in Robbits.

Orig Pub : V. sb.; Fiziol. mekhanizmy likhoradochn. raaktsii. L., Medgiz,

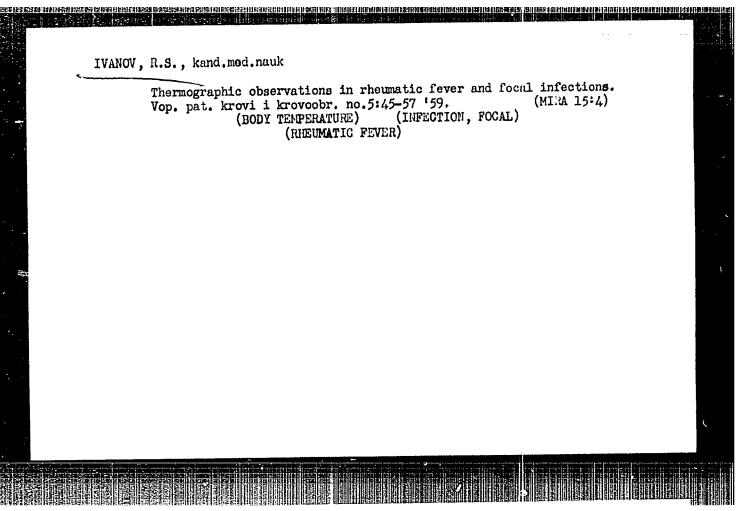
1957, 261-269.

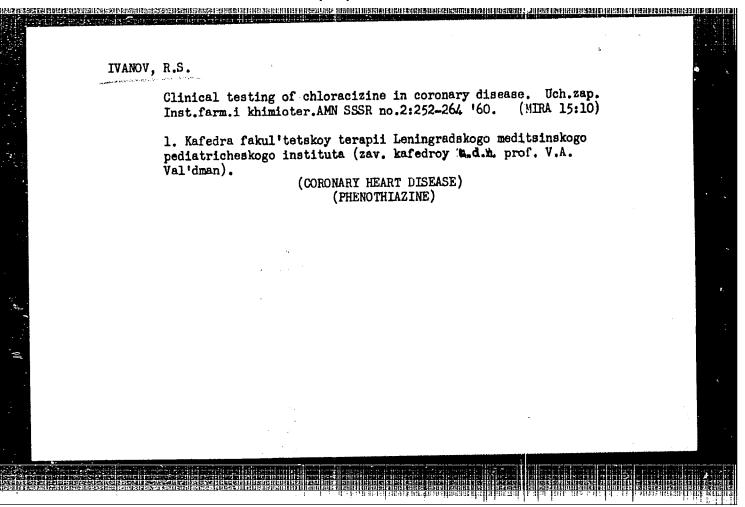
Abstract : Rabbits with an experimentally-induced sepsis in which,

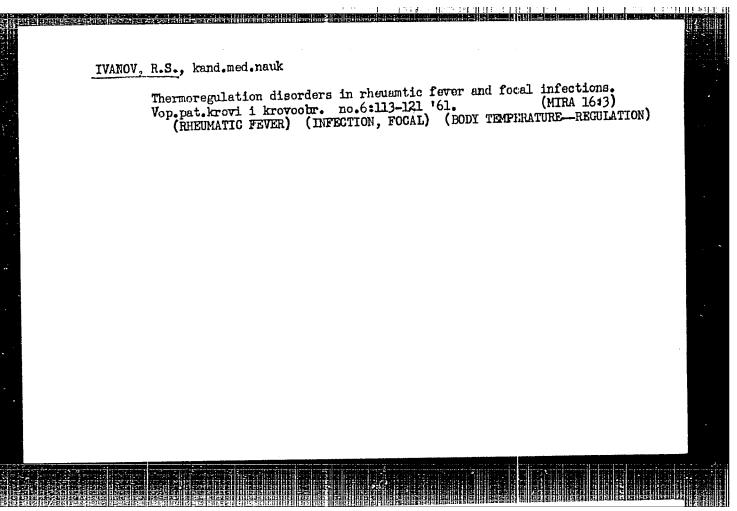
before innoculation, an artificial increase of temperature was caused by means of the introduction of an indifferent vaccine (B. mesentericus) or by means of overheating in a special chamber, showed a significantly greater capacity for survival in comparison with the controls. The animals in which a feverish reaction was depressed by administration of

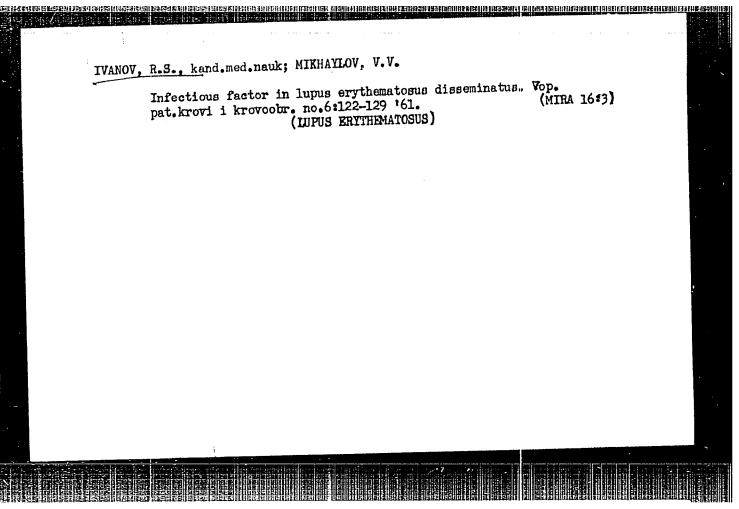
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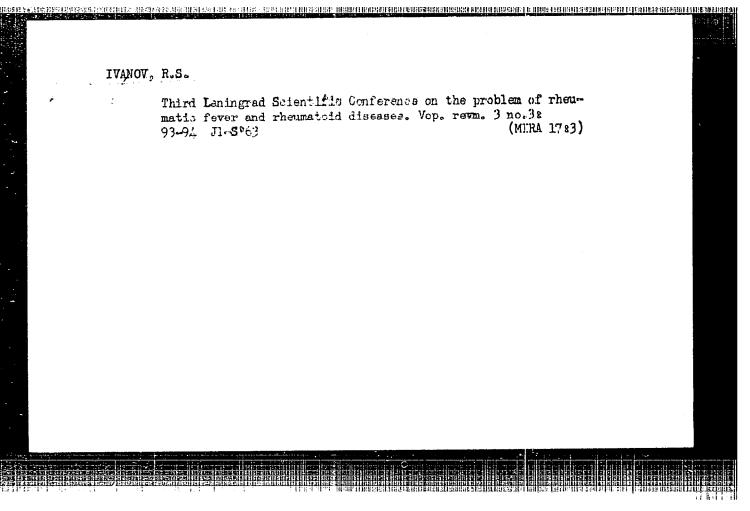






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Diagnosis and clinical aspects of myocardial infarction. Vop.
pat.krovi i krovoobr. no.6%130-137 '61. (MIRA 16%3)
(HEART--INFARCTION)



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1. Iz kafedry fakul tetskoy terapii Leningradakogo pediatricheskogo meditsinskogo instituta.

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DOKLADY. Sofiia, Bulgaria, Vol. 12, No. 1, January/February, 1959.

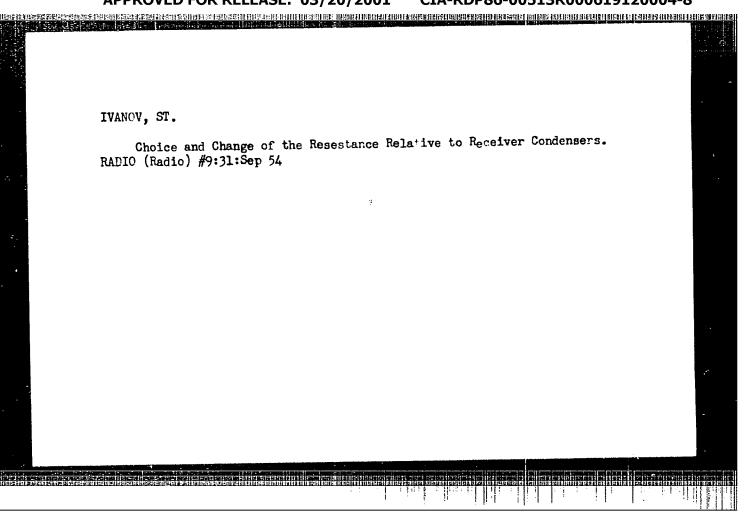
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1. Nachal'nik Sluzhby sudovogo khozyaystva Belomorsko-Onezhskogo parokhodstva (for Ivanov). 2. Nachal'nik Planovo-ekonomicheskogo otdela Belomorsko-Onezhskogo parokhodstva (for Kharitonov).

(Inland water transportation)



TVANOV,S.

Measures controlling the heating of vacuum tubes. p. 43.

RADIO. Vol. 5, no. , 1956

Sofiia, Bulgaria

SOURCE: East European Accessions List (EEAL) Library of Congress, Vol. 6, No. 1, January 1957

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IVANOV, S.

Valuable device for a radio mechanic. p. 55.

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Sofiia, Bulgaria

SOURCE: East European Accessions List (EEAL) Library of Congress, Vol. 6, No. 1, January 1957

IVANOV, S.

IVANOV, S. Electric assembling of redio agreertus. p. 59.

Vol. 5, No. 3, 1956.
RADIO
TECHNOLOCY
Softia, Fulgaria

So: East European Accession, Vol. 6, No. 2, Feb. 1957

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Making needles for measuring instruments. p. 21.

RADIO. Vol. 5, no. 7, 1956

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SOURCE: East European Accessions List (EEAL) Library of Congress, Vol. 6, No. 1, January 1957

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Curiosities in radio technology. p.61. (RADIO I TELEVIZIIA, Vol. 6, no. 1, 1957, Sofia, Bulgaria.)

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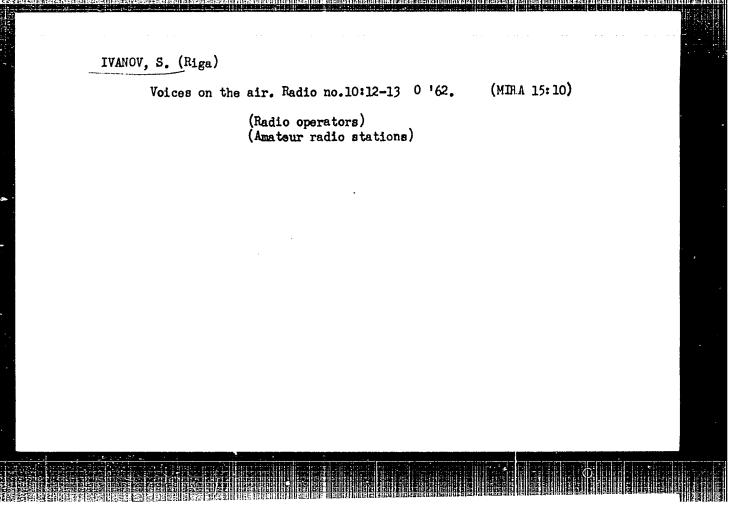
Method for inscribing on the face of surfaces. p.19. (RADIO I TELEVIZIIA, Vol. 6, no. 4, 1957, Sofia, Bulgaria.)

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Mechanism of the selector switch. p. 39.
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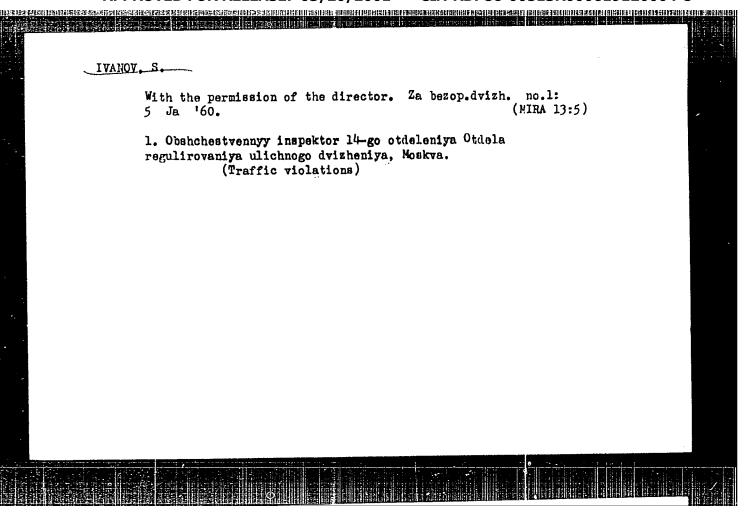
SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 12, December 1957 Uncl.

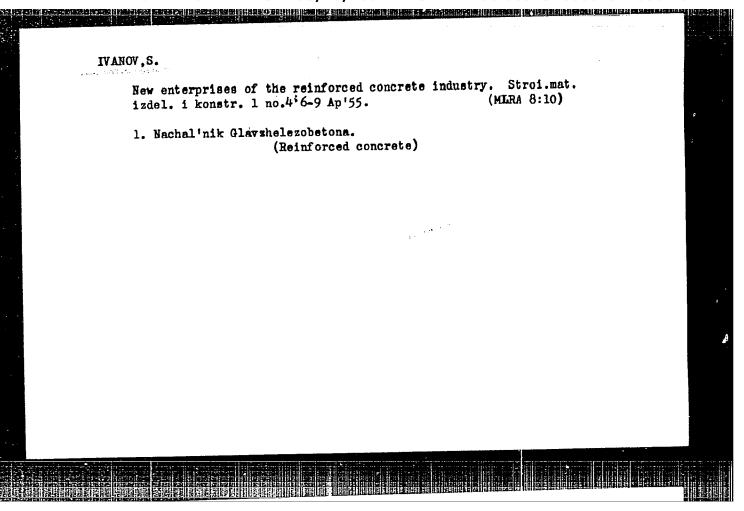


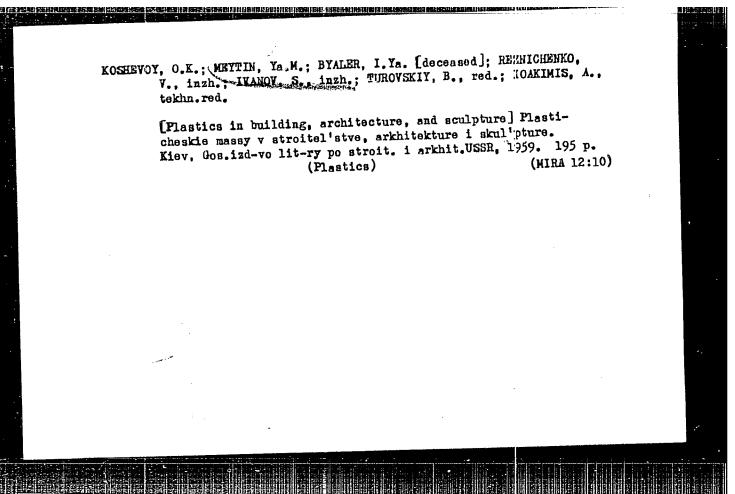
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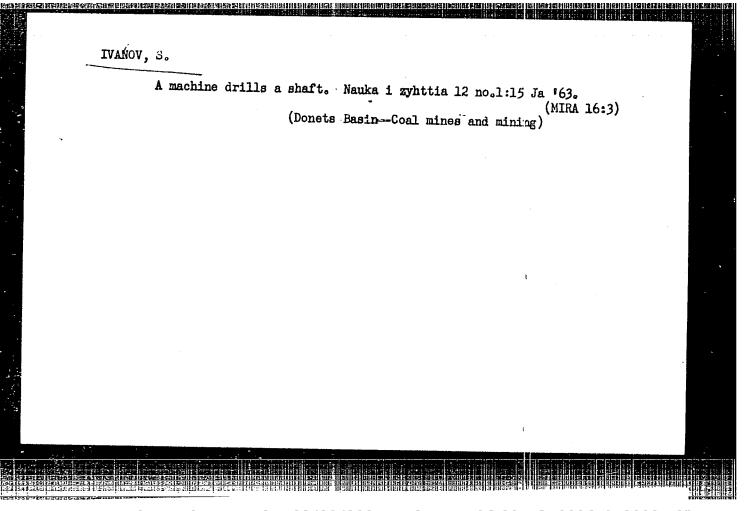
BUDANTSEV, Yuriy Yustovich; IVANOV, S., red.; NAZAROVA, A.,
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[Electronic aides of a dispatcher] Elektronnye pomoshchniki dispetchera. Moskva, Izd-vo "Znanie," 1963. 31 p.
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(Traffic safety)

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Possibilities of reducing the cost of construction and adsembly work. Muk.-elev. prom. 28 no.12:20-21 D '62. (MIRA 16:1)

1. Glavnyy bukhgalter tresta Spetselevatormel'montash. (Grain elevators) (Flour mills)

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Promoters of technical development. NTO 4 no.12:12 D '62.
(MIRA 16:1)

1. Predsedatel' amotrovoy komissii Belomorsko-Onezhskogo
basseynovogo pravleniya nauchno-tekhnicheskikh obshchestv (for
Ivanov). 2. Chlen Belomorsko-Onezhskogo pravleniya nauchnotekhnicheskikh obshchestv (for Tyazhelkov).
(Inland water transportation)

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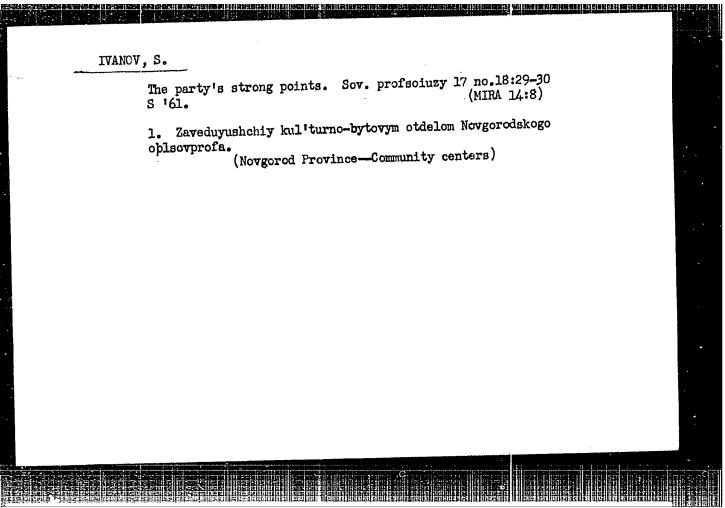
B-84590, 26 Apr 55

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SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4

No. 5, kay 1955, Uncl.



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	The "red corner" in a village. Sov. profesiuzy 18 no.1:31 Ja '62. (MIRA 15:2)
	1. Zaveduyushchiy kuliturno-bytovym otdelom Novgorodskogo oblprofsoveta.
	(Novgorod Province—Community centers)
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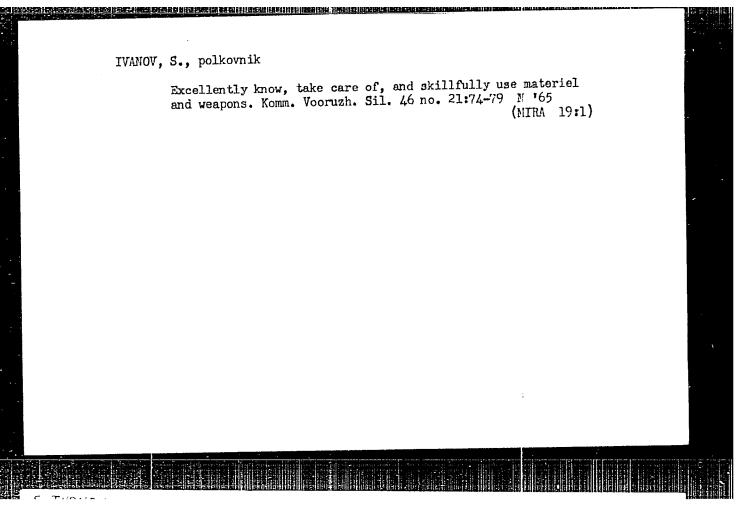
Important regulation of the statutes of the CFSU. Mast.

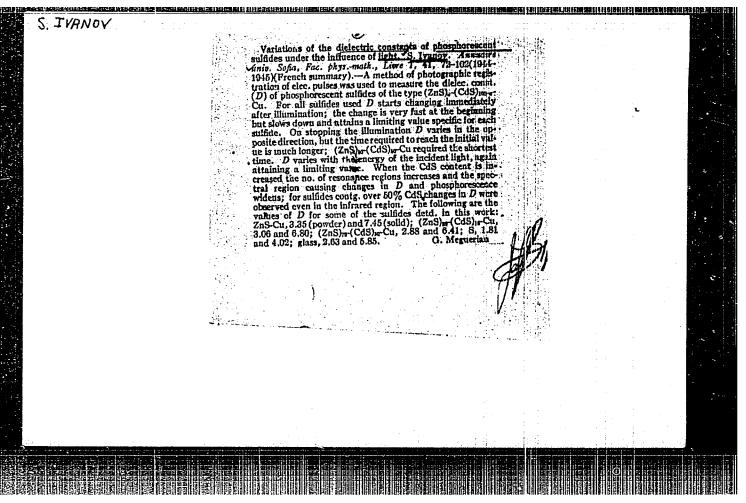
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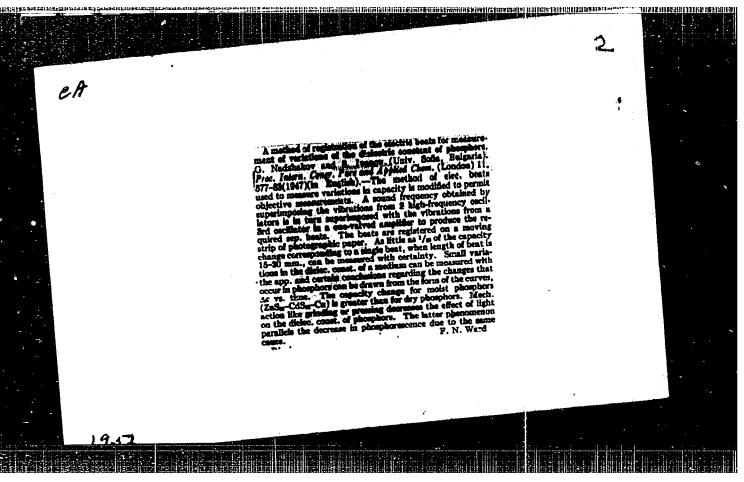
1. Sekretar: partbyuro Nauchno-issledovatel'skogo instituta khudozhestvennoy promyshlennosti, g. Moskva.

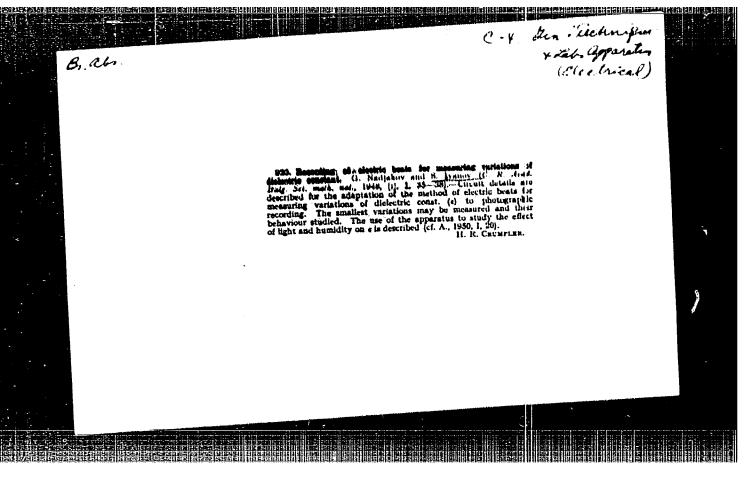
(Communist Party of the Soviet Union)

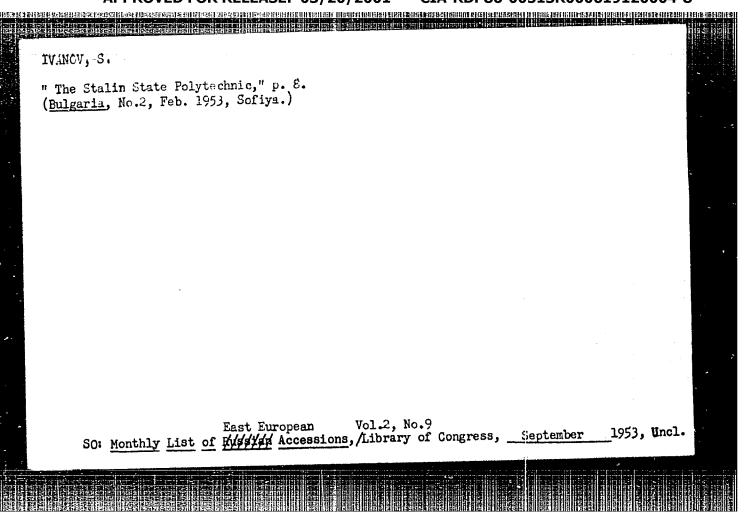
(Art industries)

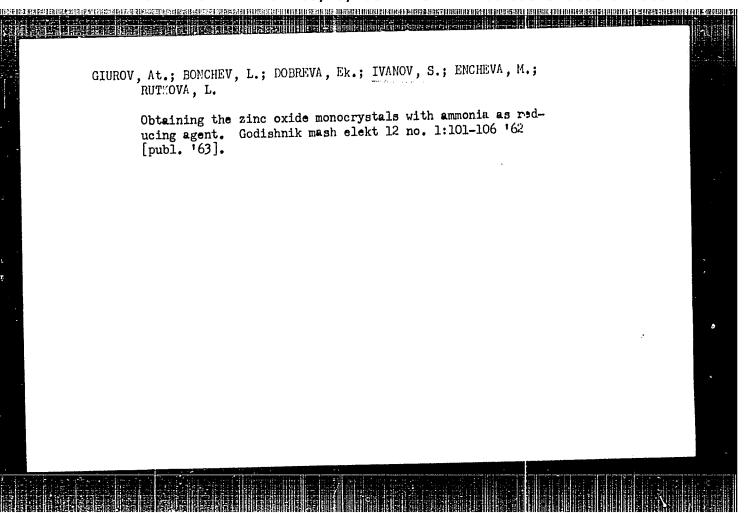












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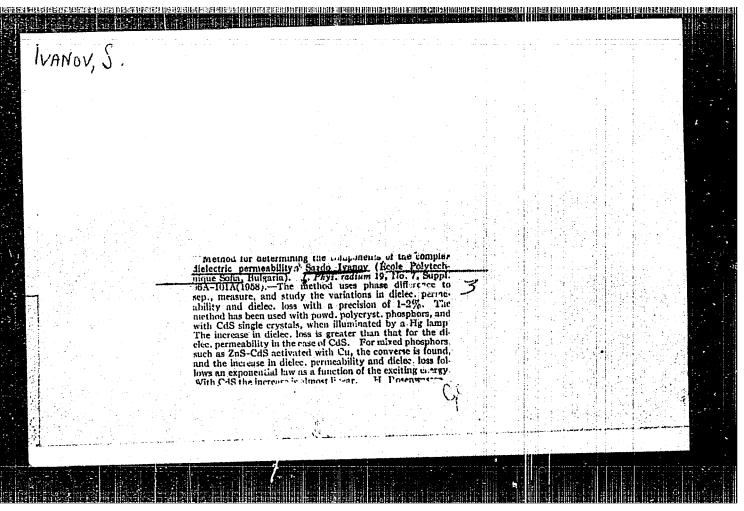
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1. Submitted by Corresponding Member E. Djakov [Dzhakov, E.].

TVANCV, SAZDO
(Physics; university lectures. 2d ed. illus., bibl., diagra., graphs, index)

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Inhibitory effect of polymethylene-bis-lepidinic directorides on serum cholinesterase activity. Doklady BAN 17 no.7:665-667 '64.

1. Submitted by Corresponding Member P. Nikolev.

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Sensitive thermoelectric vacuum gauge with a thermistor. Prib. i tekh. eksp. 9 no.38129-131 My-Je '64 (MIRA 18:1)

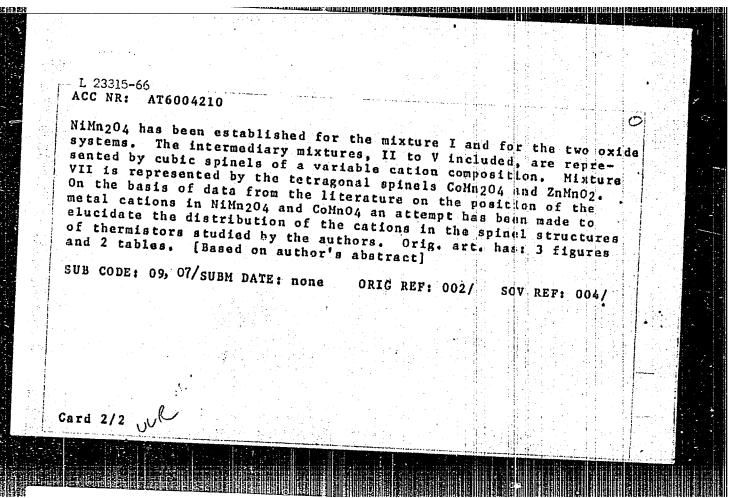
1. Fizicheskiy fakulitet Universiteta, Sofiya, Bolgariya.

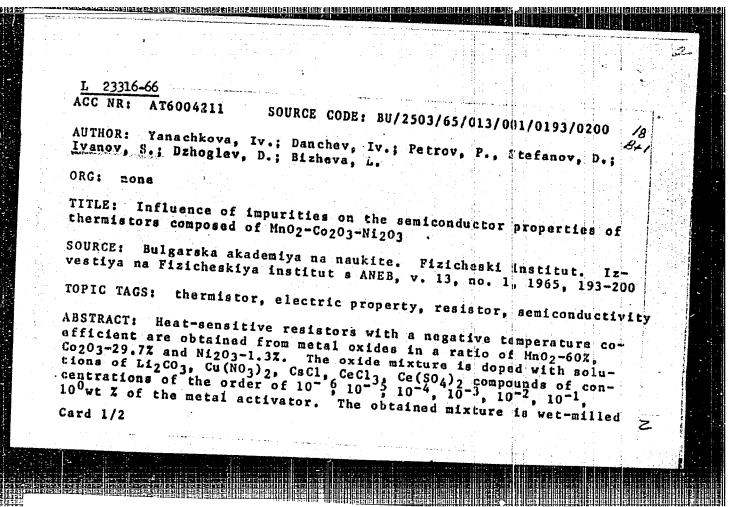
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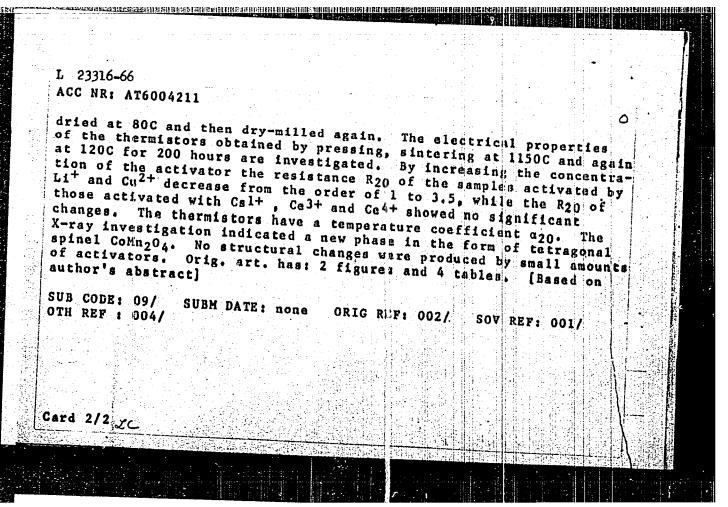
#### CIA-RDP86-00513R000619120004-8

ikan di Kirkerika kirintan Kiri kulturas irintaksi La L 32213-66 EWP(t)/ETI LIP(c) ACC NR: AP6020810 SOURCE CODE: BU/0011/65/018/006/0525/0528 AUTHOR: Ivanov, S.; Djoglev, D.; Stefanov, D.; Danchev, I.; Petrov, P.; Janachkova, I.; Bizheva, L. ORG: Institute of Physics, BAN TITLE: Some properties of thermistors made of three-compound oxide systems SOURCE: Bulgarska akademiya na naukite, Doklady, v. 18, no. 6, 1965, 525-528 TOPIC TAGS: thermistor, semiconductor research, admixture, x-ray analysis ABSTRACT: Thermistors are usually made of oxide mixtures (see, e.g., N. P. Potapov, Tr. Odessk. gidro-moteorol. i-ta, 37, 1956, No. 8; M. Ya. Kushnerev, V. P. Linde, S. Z. Roginskiy, FTT, III, 1961, No. 2, 384). The present paper describes the production of three-component MrD2-Ni203-002--0z and MnOz-Niz-Oz-ZnO systems whose properties may be altered by small admixture activation. In addition to the Volt-Ampere and temperature characteristics of the system, the authors present also comprehensive results of X-ray structural analysis of the various semiconductors produced and the distribution of metallic admixtures within the spinel structures. This paper was presented by Academician G. Nadjakov on 23 February 1965. ()rig. art. has: 2 figures and 2 tables. Orig. art. in German JPRS SUB CODE: 09, 07/ SUBM DATE: 23Feb65 / ORIG REF: 004/ SOV REF: 003 دے | Card 1/1

23315-66 ACC NR: AT6004210 SOURCE CODE: BU/2503/65/013/001/0185/0192 AUTHOR: Stefanov, D.; Danchev, Iv.; Yanachkova, Iv. Ivanov, S.; Dzhoglev, D.; Bizheva, L. ORG: none TITLE: X-Ray structural studies of thermistors obtained from the three-component systems  $MnO_2-Ni_2O_3-Co_2O_3$  and  $MnO_2-Ni_2O_3-ZnO_3$ SOURCE: Bulgarska, akademiya na naukite. Fizicheski institut. Izvestiya na Fizicheskiya institut s ANEB, v. 13, no. 1, 1965, 185-192 TOPIC TAGS: thermistor, spinel, mineral, x ray investigation Thermistors baked at a temperature of 1150C, which have been studied in detail in earlier papers are the object of detailed X-ray structural investigations. The X-ray structural data obtained have shown that after baking new chemical compounds are formed of the type of spinels. According to the chemical composition of the mixtures studied, different spinels are formed. The cubic spinel Card 1/2







SUKHOVA, G.V.; IVANOV, S.A.; ODAYSKAYA, Ye.).

Equipment for washing work clothes and cleaning dust off them.
Adm.-byt. komb. ugol'. shakht. no 4:37-42 '61. (MIRA 15:8)

1. Akademiya kommunal'nogo khozyay tva im. K.D.Pamfilova.

(Work clothes--Cleaning) (Dust--Removal)

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77237 SOV/89-8-2-2/30

AUTHORS:

Kramerov, A. Ya., Fridman, Ya. B., Ivanov, S. A.

TITLE:

Thermal Stresses in Reactor Structures

PERIODICAL:

Atomnaya energiya, 1960, Vol 8, Nr 2, pp 101-111 (USSR)

ABSTRACT:

Introduction. Specific operating conditions of nuclear reactors stimulated many studies of thermal stresses and their causes, in particular, studies of: (a) intensive neutron and \( \gamma\) -radiations lowering ductility at low temperatures; (b) internal sources of reliative heatgeneration; (c) high heat flows (10<sup>b</sup> kcal/m²·h) and heatgeneration densities (10<sup>b</sup> kcal/m³·h) which cause large temperature gradients (approximately 100<sup>c</sup> C/mm); (d) applications of new, little-known materials and combinations of materials with different thermal expansion coefficients; (e) thermal shocks in structures (like those following sudden shutdowns of reactors in case of damage); and (f) use of new complex structures not having analogs in conventional engineering, nor

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Thermal Stresses in Reactor Structures

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being tested during continuous operation. Estimate of the Magnitude of Thermal Stresses. The authors first review the known facts that in the case of very high thermal stresses the body or parts of it become ductile, causing thermoplastic stresses which depend also on the "prehistory" of the body. Ther thermoplastic stresses can be computed by known approximate methods. In the elastic region stresses determined at any moment by the temperature field, and the temperature fields themselves, can be obtained using known system of equations for thermal conductivity and theory of elasticity. For the case of bodies with cylindrical symmetry, often encountered in reactors, there exist known equations valid in the case of no outside field, for the azimuthal, radial, and axial normal thermoelastic stresses of the first order  $\sigma_{\theta}$ ,  $\sigma_{r}$ , and  $\sigma_{z}$ .

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$$\sigma_{\emptyset} = \frac{E}{1 - v} \left( \frac{1}{r^{2}} \frac{r^{2} + a^{2}}{b^{2} - a^{2}} \int_{a}^{b} \alpha \Delta T(r) r dr + \frac{1}{r^{2}} \int_{a}^{r} \alpha \Delta T(r) dr - \alpha \Delta T(r) \right); \qquad (3)$$

$$\sigma_{r} = \frac{E}{1 - v} \left( \frac{1}{r^{2}} \frac{r^{2} - a^{2}}{b^{2} - a^{2}} \int_{a}^{b} \alpha \Delta T(r) dr - \frac{1}{r^{2}} \int_{a}^{r} \alpha \Delta T(r) r dr \right) \qquad (4)$$

and

$$\sigma_z = \sigma_0 + \sigma_r. \tag{5}$$

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where E is Young's modulus (kg/cm<sup>2</sup>);  $\nu$  is Poisson coefficient;  $\Delta$  T = T<sub>r</sub> - T<sub>or</sub> is the change in temperature with respect to the original temperature (T<sub>or</sub>)

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of the unstressed state; a, b are the inner and outer radii of the tubing;  $\alpha$  is the coefficient of thermal linear expansion. The authors discuss some special cases, and derive the known equation

$$\sigma = \frac{E}{1 - cv} \overline{(\alpha \Delta T - \alpha \Delta T)}.$$

where  $\Omega$   $\Delta$  T is the value of the mean free thermal stretching, and c can take the values of 0, 1, and 2 for the uniaxial, biaxial, and volume stresses respectively. This equation enables one to find the largest stress in a cylindrical bar, thick-walled tube, in a plate with fixed ends, and a symmetrical temperature distribution in some other cases when principal deformations in every point are equal to one another, or some of them are equal to zero (linear and plane stress states), and also if they are constant over any main surface. The authors note that little was done to develop methods for evaluating

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thermal stresses of the second order. Thermal stresses of the first order and temperature distributions may be represented as a sum of the particular solution of the homogeneous equation (without internal sources of heat and actual boundary conditions—index  $\Delta$  T) and the solution of the heat transfer equation with internal heat sources and a zero boundary condition (index q). This is a consequence of the linearity of the heat transfer equation. Each of these solutions can in turn be written as a product of three terms, expressing respectively the influence of the physical properties, density of heat generation, and the size (or  $\Delta$  T<sub>D</sub>) and shape of the bodies. The authors obtained

$$\sigma = \sigma_{q} + \sigma_{\Lambda T} = \left[ \frac{\sigma E}{1 - \nu} \frac{1}{\lambda} \right] \left[ \frac{q r_{0}^{2}}{4} \right] \Psi_{\sigma_{q}} + \left[ \frac{\sigma E}{1 - \nu} \right] \left[ \frac{\Delta T b}{2} \right] \Psi_{\sigma_{\Lambda T}}.$$

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by using Eq. (2)

$$\Delta T = \frac{q_F \frac{1}{2} r_0}{\lambda} = \frac{1}{\lambda} \frac{Q}{F_q} \frac{V}{F_q} = \frac{q}{4\lambda} r_0^2, \qquad (2)$$

for the temperature difference across the cross section of a more of less plastic body, in the presence of internal heat sources. Here q is the density of heat generation rate (kcal/m³·h);  $1/2 r_0 = 1/2 \frac{2V}{F_0}$  is the

quantity proportional to the mean distance of travel of heat in the body; V is the volume of the body  $(m^3)$ ;  $q_F = \frac{Q}{F}$  is the heat flow  $(kcal/m^2 \cdot h)$ ; Q is the

total heat transfer rate (kcal/h); F is the surface of the heat exchange; and  $\Psi$  is the form factor, equal to the ratio of stresses (or temperature drops) on the

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body of a given shape to those in a cylinder (all other conditions being equal). If we neglect neutron energy absorption, we have to take into account only the average absorption of  $\gamma$ -rays, which is proportional to the specific gravity for elements in the middle of the Atomic Table. We do this by modifying the first factor (expressing the influence of physical factors) in Eq. B into

$$\frac{aE}{1-v} \frac{\gamma}{\lambda}$$
.

С

Introducing finally the ratio  $\sigma / \sigma_D$ , the term accounting for physical properties becomes

$$\frac{aE}{1-v} \frac{1}{\lambda \sigma_T}$$
.

D

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adjusted for the possibility that the body becomes plastic. It is difficult to avoid the transition to the domain of irreversible deformation when working with materials of high  $\alpha$  and low  $\lambda$  and  $\sigma_D$ . Uranium and stainless steel in this respect are poor. In spite of their low  $\sigma_{B}$  and  $\sigma_{T}$  value, thorium, graphite, and, in a smaller degree, zirconium and aluminum are less liable to produce permanent deformations. (Abstracter's Note:  $\lambda$ ,  $\sigma_{D(uctile)}$  and  $\sigma_{B}$  were never defined in this article.) The authors point out that even without touching the problems of cost, radiation stability, and corrosion stability of materials, their comparison concerning the thermal stress stability represents an extremely complex and conditional problem. Appropriate complex coefficients should contain reliability coefficients which are still vague for many ductile materials subjected to thermal fatigues. The influence of the  $\sigma_{\,\mathrm{D}}$  quantity is not well defined since its increase

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Thermal Stresses in Reactor Structures

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sometimes turns out to be harmful (because of a slower relief from the thermal stresses of the plasic deformation), but can also have useful influences, such as a reduction of accumulation of plastic deformations. In addition, many properties depend on the preparation and structure of the material. Comparison of heatgenerating elements of various shapes. The authors require that for comparison purposes all the elements have the same volume per unit of the heat-emitting surface. They present an equation for maximum temperature drops and macrotemperature elastic stresses of the first kind for four basic cross sections of heatproducing elements (not taking into account heat production). The temperature drop  $\frac{qr_0^2}{r_0}$  along  $r_0$  is denoted by  $\Delta T_0$ , and the maximum thermoelastic stresses in the cylinder  $\frac{\Delta E}{1}$  is denoted by  $\sigma_0$ . These in the cylinder  $\frac{\alpha E}{1-\nu}$ is denoted by  $\sigma_{o}$ . equations were obtained after solving the equations for stationary heat transfer  $(- \lambda \Delta T = q)$ , assuming

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appropriate boundary conditions. The derivation of the most complicated third case is presented in the Appendix. In case 1 concerning a tube or cylinder cooled from the outside

$$\Delta T_{\text{max}} = \Delta T_0 \Psi^{(1)}_{\Delta T_q}, \ (\sigma_{\theta})_{r=b} = \sigma_0 \Psi^{(1)}_{\sigma_q}.$$

Case 2 represents represents a tube cooled from the inside,

$$\Delta T_{\text{max}} = \Delta T_0 \Psi_{\Delta T_0}^{(2)}; \ (\sigma_{\theta})_{r=a} = \sigma_0 \Psi_{\sigma_{\theta}}^{(2)}.$$

In the case 3 the tube is cooled both from the inside and outside

$$\Delta T_{\text{max}} = \Delta T_0 \frac{1 - \tilde{\varrho}^2 (1 - \ln \tilde{\varrho}^2)}{(1 - \varrho)^2}.$$

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